S.E. (Comp.) (Sem-IV) (Rev.) NOV/DEC 20:

1-11-13-DTP28-NK-10

5/12/13 CG

Con. 6454-13. **LJ-10531**

(3 Hours) **[Total Marks : 100**

N.B. : (1) Question no. **1** is **compulsory**.
(2) Attempt any **four** questions out of the remaining **six** questions.
(3) Assume suitable **data** if **necessary**.
(4) **Figures** to the **right** indicate **full** marks.

1. (a) Explain character generation methods. **5**
(b) Explain inside outside test used in filling algorithm. **5**
(c) What is antialiasing, how can it be reduced. **5**
(d) Explain z-buffer algorithm for removing hidden surfaces. **5**

2. (a) Explain flood fill algorithm using 8-connected approach. Give its advantages and disadvantages. **10**
(b) Derive Bresenham's line drawing algorithm. Plot a line by using Bresenham's line generation algorithm from (1,1) to (5,3). **10**

3. (a) Translate the square ABCD whose co-ordinates are A(0,0), B(3,0), C(3,3) and D(0,3) by 2 units in both directions and then scale it by 1.5 units in x-direction and 0.5 units in y-direction. **10**
(b) List and explain operations on segments. **10**

4. (a) Find the clipping co-ordinates to clip the line segment AB against the window using cohen-sutherland line clipping algorithm. **10**
Line - A (120, 60), B (160, 92)
Xwmin = 100 Ywmin = 80
Xwmax = 150 Ywmax = 100
(b) Explain Warnock's algorithm. **10**

5. (a) State important properties of Bezier curve. Compare Bezier curves and B-spline curve. **10**
(b) Explain parallel and perspective projection? Derive the matrix for perspective projection. **10**

6. (a) Explain 3D object representation methods. **10**
(b) Define the window, view port and derive window to viewport transformation. **10**

7. Write short note on :- (any **four**) **20**
(a) Colour models
(b) Raster techniques
(c) Display file interpreter
(d) Fractals
(e) 3D clipping.
